H67M-GE

User Manual

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(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

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The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance.
"Perchlorate Material-special handling may apply, see www.dtsc.ca.gov/hazardouswaste/perchlorate"

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Chapter 1: Introduction

Thank you for purchasing ASRock ***H67M-GE*** motherboard, a reliable motherboard produced under ASRock's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock's commitment to quality and endurance.

In this manual, chapter 1 and 2 contain introduction of the motherboard and step-by-step guide to the hardware installation. Chapter 3 and 4 contain the con guration guide to BIOS setup and information of the Support CD.

Because the motherboard speci cations and the BIOS software might be updated, the content of this manual will be subject to change without notice. In case any modi cations of this manual occur, the updated version will be available on ASRock website without further notice. You may nd the latest VGA cards and CPU support lists on ASRock website as well. ASRock website http://www.asrock.com

If you require technical support related to this motherboard, please visit our website for speci c information about the model you are using. www.asrock.com/support/index.asp

1.1 Package Contents

ASRock ***H67M-GE*** Motherboard
(Micro ATX Form Factor: 9.6-in x 9.6-in, 24.4 cm x 24.4 cm)
ASRock ***H67M-GE*** Quick Installation Guide
ASRock ***H67M-GE*** Support CD
2 x Serial ATA (SATA) Data Cables (Optional)
1 x I/O Panel Shield
1 x 3D Red/Cyan Anaglyph Glasses (Optional)

ASRock Reminds You...

To get better performance in Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit, it is recommended to set the BIOS option in Storage Con guration to AHCI mode. For the BIOS setup, please refer to the "User Manual" in our support CD for details.

1.2 Specifications

Platform	- Micro ATX Form Factor: 9.6-in x 9.6-in, 24.4 cm x 24.4 cm - All Solid Capacitor design
CPU	- Supports 2nd Generation Intel® Core™ i7 / i5 / i3 in LGA1155 Package - 4 + 1 Power Phase Design - Supports Intel® Turbo Boost 2.0 Technology - Supports K-Series unlocked CPU - Supports Hyper-Threading Technology (see **CAUTION 1**)
Chipset	- Intel® H67
Memory	- Dual Channel DDR3 Memory Technology (see **CAUTION 2**) - 4 x DDR3 DIMM slots - Supports DDR3 1333/1066 non-ECC, un-buffered memory - Max. capacity of system memory: 32GB (see **CAUTION 3**)
Expansion Slot	- 1 x PCI Express 2.0 x16 slot (blue @ x16 mode) - 2 x PCI Express 2.0 x1 slots - 1 x PCI slot
Graphics *	* Requires a Processor with Intel® Graphics Technology - Intel® HD Graphics 2000/3000 - Pixel Shader 4.1, DirectX 10.1 - Max. shared memory 1759MB (see **CAUTION 4**) - Three VGA Output options: D-Sub, DVI-D and HDMI (see **CAUTION 5**) - Supports HDMI 1.4a Technology with max. resolution up to 1920x1200 @ 60Hz - Supports DVI with max. resolution up to 1920x1200 @ 60Hz - Supports D-Sub with max. resolution up to 2048x1536 @ 75Hz - Supports Auto Lip Sync, Deep Color (12bpc), xvYCC and HBR (High Bit Rate Audio) with HDMI (Compliant HDMI monitor is required) (see **CAUTION 6**) - Supports Blu-ray Stereoscopic 3D with HDMI 1.4a - Supports HDCP function with DVI and HDMI ports - Supports Full HD 1080p Blu-ray (BD) / HD-DVD playback with DVI and HDMI ports
Audio	- 7.1 CH HD Audio with Content Protection (Realtek ALC892 Audio Codec) - Premium Blu-ray audio support

LAN	- PCIE x1 Gigabit LAN 10/100/1000 Mb/s - Realtek RTL8111E - Supports Wake-On-LAN - Supports LAN Cable Detection - Supports Energy Ef cient Ethernet 802.3az
Rear Panel I/O	I/O Panel - 1 x PS/2 Keyboard Port - 1 x VGA/D-Sub Port - 1 x VGA/DVI-D Port - 1 x HDMI Port - 1 x Optical SPDIF Out Port - 4 x Ready-to-Use USB 2.0 Ports - 1 x eSATA2 Connector - 2 x Ready-to-Use USB 3.0 Ports - 1 x RJ-45 LAN Port with LED (ACT/LINK LED and SPEED LED) - HD Audio Jack: Rear Speaker/Central/Bass/Line in/Front Speaker/Microphone (see **CAUTION 7**)
SATA3	- 2 x SATA3 6.0 Gb/s connectors, support RAID (RAID 0, RAID 1, RAID 10, RAID 5 and Intel Rapid Storage), NCQ, AHCI and "Hot Plug" functions
USB3.0	- 2 x USB 3.0 ports by Etron EJ168A, support USB 1.0/2.0/3.0 up to 5Gb/s
Connector	- 3 x SATA2 3.0 Gb/s connectors, support RAID (RAID 0, RAID 1, RAID 10, RAID 5 and Intel Rapid Storage), NCQ, AHCI and Hot Plug functions - 2 x SATA3 6.0Gb/s connectors - 1 x Floppy connector - 1 x IR header - 1 x CIR header - 1 x Print port header - 1 x COM port header - 1 x HDMI_SPDIF header - 1 x Power LED header - CPU/Chassis/Power FAN connector - 24 pin ATX power connector - 8 pin 12V power connector - Front panel audio connector - 3 x USB 2.0 headers (support 6 USB 2.0 ports)
BIOS Feature	- 64Mb AMI BIOS - AMI UEFI Legal BIOS with GUI support - Supports “Plug and Play”

	- ACPI 1.1 Compliance Wake Up Events - Supports jumperfree - SMBIOS 2.3.1 Support - IGPU, DRAM, PCH, CPU PLL, VTT, VCCSA Voltage Multi-adjustment
Support CD	- Drivers, Utilities, AntiVirus Software (Trial Version), ASRock Software Suite (CyberLink DVD Suite - OEM and Trial; Creative Sound Blaster X-Fi MB - Trial)
Unique Feature	- ASRock Extreme Tuning Utility (AXTU) (see **CAUTION 8**) - Instant Boot - ASRock Instant Flash (see **CAUTION 9**) - ASRock AIWI (see **CAUTION 10**) - ASRock APP Charger (see **CAUTION 11**) - SmartView (see **CAUTION 12**) - Hybrid Booster: - ASRock U-COP (see **CAUTION 13**) - Boot Failure Guard (B.F.G.) - Combo Cooler Option (C.C.O.) (see **CAUTION 14**) - Good Night LED
Hardware Monitor	- CPU Temperature Sensing - Chassis Temperature Sensing - CPU/Chassis/Power Fan Tachometer - CPU/Chassis Quiet Fan (Allow Chassis Fan Speed Auto-Adjust by CPU or MB Temperature) - CPU Fan Multi-Speed Control - Voltage Monitoring: +12V, +5V, +3.3V, CPU Vcore
OS	- Microsoft® Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP 64-bit compliant
Certifications	- FCC, CE, WHQL - ErP/EuP Ready (ErP/EuP ready power supply is required) (see **CAUTION 15**)

* For detailed product information, please visit our website: http://www.asrock.com

WARNING

Please realize that there is a certain risk involved with overclocking, including adjusting the setting in the BIOS, applying Untied Overclocking Technology, or using the third-party overclocking tools. Overclocking may affect your system stability, or even cause damage to the components and devices of your system. It should be done at your own risk and expense. We are not responsible for possible damage caused by overclocking.

CAUTION!

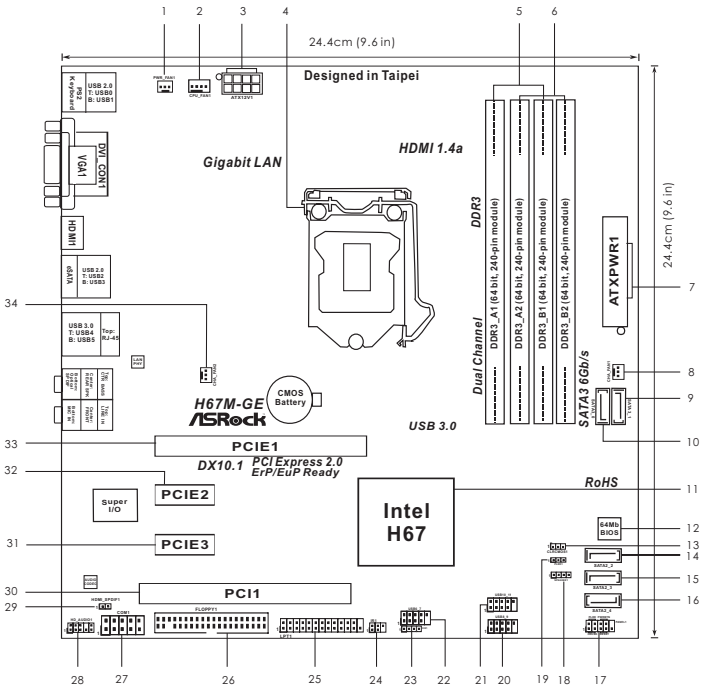
1. About the setting of “Hyper Threading Technology”, please check page 44.
2. This motherboard supports Dual Channel Memory Technology. Before you implement Dual Channel Memory Technology, make sure to read the installation guide of memory modules on page 19 for proper installation.
3. Due to the operating system limitation, the actual memory size may be less than 4GB for the reservation for system usage under Windows® 7 / Vista™ / XP. For Windows® OS with 64-bit CPU, there is no such limitation.
4. The maximum shared memory size is de ned by the chipset vendor and is subject to change. Please check Intel® website for the latest information.
5. You can choose to use two of the three monitors only. D-Sub, DVI-D and-HDMI monitors cannot be enabled at the same time. Besides, with the DVI-to-HDMI adapter, the DVI-D port can support the same features as HDMIport.
6. xvYCC and Deep Color are only supported under Windows® 7 64-bit / 7. Deep Color mode will be enabled only if the display supports 12bpc in EDID. HBR is supported under Windows® 7 64-bit / 7 / Vista™ 64-bit / Vista™.
7. For microphone input, this motherboard supports both stereo and mono modes. For audio output, this motherboard supports 2-channel, 4-channel, 6-channel, and 8-channel modes. Please check the table on page 13 for proper connection.
8. ASRock Extreme Tuning Utility (AXTU) is an all-in-one tool to ne-tune different system functions in a user-friendly interface, which is including Hardware Monitor, Fan Control, Overclocking, OC DNA and IES. In Hardware Monitor, it shows the major readings of your system. In Fan Control, it shows the fan speed and temperature for you to adjust. In Overclocking, you are allowed to overclock CPU frequency for optimal system performance. In OC DNA, you can save your OC settings as a pro le and share with your friends. Your friends then can load the OC pro le to their own system to get the same OC settings. In IES (Intelligent Energy Saver), the voltage regulator can reduce the number of output phases to improve efficiency when the CPU cores are idle without sacrificing computing performance. Please visit our website for the operation procedures of ASRock Extreme Tuning Utility (AXTU).
   ASRock website: http://www.asrock.com
9. ASRock Instant Flash is a BIOS ash utility embedded in Flash ROM. This convenient BIOS update tool allows you to update system BIOS without entering operating systems rst like MS-DOS or Windows®. With this utility, you can press <F6> key during the POST or press <F2> key to BIOS setup menu to access ASRock Instant Flash. Just launch this tool and save the new BIOS le to your USB ash drive, oppy disk or hard

drive, then you can update your BIOS only in a few clicks without preparing an additional oppy diskette or other complicated ash utility. Please be noted that the USB ash drive or hard drive must use FAT32/16/12 le system.

10. To experience intuitive motion controlled games is no longer only available at Wii. ASRock AIWI utility introduces a new way of PC gaming operation. ASRock AIWI is the world's rst utility to turn your iPhone/iPod touch as a game joystick to control your PC games. All you have to do is just to install the ASRock AIWI utility either from ASRock of cial website or ASRock software support CD to your motherboard, and also download the free AIWI Lite from App store to your iPhone/iPod touch. Connecting your PC and apple devices via Bluetooth or WiFi networks, then you can start experiencing the exciting motion controlled games. Also, please do not forget to pay attention to ASRock of cial website regularly, we will continuously provide you the most up-do-date supported games!
ASRock website: http://www.asrock.com/Feature/Aiwi/index.asp
11. If you desire a faster, less restricted way of charging your Apple devices, such as iPhone/iPod/iPad Touch, ASRock has prepared a wonderful solution for you - ASRock APP Charger. Simply installing the APP Charger driver, it makes your iPhone charged much quickly from your computer and up to 40% faster than before. ASRock APP Charger allows you to quickly charge many Apple devices simultaneously and even supports continuous charging when your PC enters into Standby mode (S1), Suspend to RAM (S3), hibernation mode (S4) or power off (S5). With APP Charger driver installed, you can easily enjoy the marvelous charging experience than ever.
ASRock website: http://www.asrock.com/Feature/AppCharger/index.asp
12. SmartView, a new function of internet browser, is the smart start page for IE that combines your most visited web sites, your history, your Facebook friends and your real-time newsfeed into an enhanced view for a more personal Internet experience. ASRock motherboards are exclusively equipped with the SmartView utility that helps you keep in touch with friends on-the-go. To use SmartView feature, please make sure your OS version is Windows® 7 / 7 64 bit / Vista™ / Vista™ 64 bit, and your browser version is IE8. ASRock website: http://www.asrock.com/Feature/SmartView/index.asp
13. While CPU overheat is detected, the system will automatically shutdown. Before you resume the system, please check if the CPU fan on the motherboard functions properly and unplug the power cord, then plug it back again. To improve heat dissipation, remember to spray thermal grease between the CPU and the heatsink when you install the PC system.
14. Combo Cooler Option (C.C.O.) provides the exible option to adopt three different CPU cooler types, Socket LGA 775, LGA 1155 and LGA 1156. Please be noticed that not all the 775 and 1156 CPU Fan can be used.

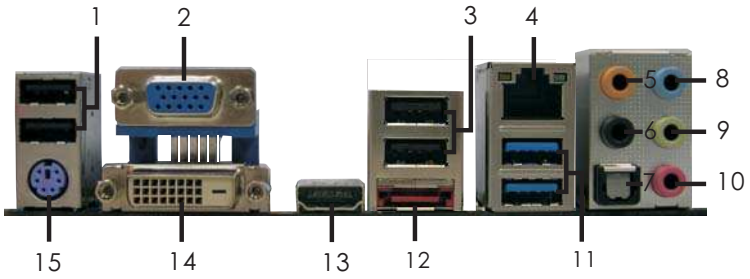
15. EuP, stands for Energy Using Product, was a provision regulated by European Union to de ne the power consumption for the completed system. According to EuP, the total AC power of the completed system shall be under 1.00W in off mode condition. To meet EuP standard, an EuP ready motherboard and an EuP ready power supply are required. According to Intel's suggestion, the EuP ready power supply must meet the standard of 5v standby power ef ciency is higher than 50% under 100 mA current consumption. For EuP ready power supply selection, we recommend you checking with the power supply manufacturer for more details.

1.3 Motherboard Layout



1	Power Fan Connector (PWR_FAN1)	19	Power LED Header (PLED1)
2	CPU Fan Connector (CPU_FAN1)	20	USB 2.0 Header (USB8_9, Blue)
3	ATX 12V Power Connector (ATX12V1)	21	USB 2.0 Header (USB10_11, Blue)
4	1155-Pin CPU Socket	22	USB 2.0 Header (USB6_7, Blue)
5	2 x 240-pin DDR3 DIMM Slots (Dual Channel: DDR3_A1, DDR3_B1, Blue)	23	Consumer Infrared Module Header (CIR1)
6	2 x 240-pin DDR3 DIMM Slots (Dual Channel: DDR3_A2, DDR3_B2, White)	24	Infrared Module Header (IR1)
7	ATX Power Connector (ATXPWR1)	25	Print Port Header (LPT1, White)
8	Chassis Fan Connector (CHA_FAN1)	26	Floppy Connector (FLOPPY1)
9	SATA3 Connector (SATA3_1, White)	27	COM Port Header (COM1)
10	SATA3 Connector (SATA3_0, White)	28	Front Panel Audio Header (HD_AUDIO1, White)
11	Intel H67 Chipset	29	HDMI_SPDIF Header (HDMI_SPDIF1, White)
12	64Mb SPI Flash	30	PCI Slot (PCI1)
13	Clear CMOS Jumper (CLRCMOS1)	31	PCI Express 2.0 x1 Slot (PCIE3, White)
14	SATA2 Connector (SATA2_2, Blue)	32	PCI Express 2.0 x1 Slot (PCIE2, White)
15	SATA2 Connector (SATA2_3, Blue)	33	PCI Express 2.0 x16 Slot (PCIE1, Blue)
16	SATA2 Connector (SATA2_4, Blue)	34	Chassis Fan Connector (CHA_FAN2)
17	System Panel Header (PANEL1, White)		
18	Chassis Speaker Header (SPEAKER 1, White)		

1.4 I/O Panel



1	USB 2.0 Ports (USB01)	** 9	Front Speaker (Lime)
2	VGA/D-Sub Port	10	Microphone (Pink)
3	USB 2.0 Ports (USB23)	11	USB 3.0 Ports (USB45)
* 4	LAN RJ-45 Port	12	eSATA2 Port
5	Central / Bass (Orange)	13	VGA/HDMI Port
6	Rear Speaker (Black)	14	VGA/DVI-D Port
7	Optical SPDIF Out Port	15	PS/2 Keyboard Port (Purple)
8	Line In (Light Blue)		

* There are two LED next to the LAN port. Please refer to the table below for the LAN port LED indications.

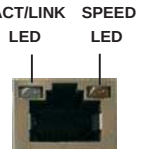
LAN Port LED Indications

Activity/Link LED

Status	Description
Off	No Link
Blinking	Data Activity
On	Link

SPEED LED

Status	Description
Off	10Mbps connection
Orange	100Mbps connection
Green	1Gbps connection



LAN Port

** If you use 2-channel speaker, please connect the speaker's plug into "Front Speaker Jack". See the table below for connection details in accordance with the type of speaker you use.

TABLE for Audio Output Connection

Audio Output Channels	Front Speaker (No. 9)	Rear Speaker (No. 6)	Central / Bass (No. 5)	Line In or Side Speaker (No. 8)
2	V	--	--	--
4	V	V	--	--
6	V	V	V	--
8	V	V	V	V

To enable Multi-Streaming function, you need to connect a front panel audio cable to the front panel audio header. After restarting your computer, you will nd “Mixer” tool on your system. Please select “Mixer ToolBox” , click “Enable playback multi-streaming”, and click “ok”. Choose “2CH”, “4CH”, “6CH”, or “8CH” and then you are allowed to select “Realtek HDA Primary output” to use Rear Speaker, Central/Bass, and Front Speaker, or select “Realtek HDA Audio 2nd output” to use front panel audio.

Chapter 2: Installation_

This is a Micro ATX form factor (9.6" x 9.6", 24.4 x 24.4 cm) motherboard. Before you install the motherboard, study the con guration of your chassis to ensure that the motherboard ts into it.

Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries to you and damages to motherboard components.

2.1 Screw Holes

Place screws into the holes indicated by circles to secure the motherboard to the chassis.

Do not over-tighten the screws! Doing so may damage the motherboard.

2.2 Pre-installation Precautions

Take note of the following precautions before you install motherboard components or change any motherboard settings.

1. Unplug the power cord from the wall socket before touching any component.
2. To avoid damaging the motherboard components due to static electricity, NEVER place your motherboard directly on the carpet or the like. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle components.
3. Hold components by the edges and do not touch the ICs.
4. Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that comes with the component.

Before you install or remove any component, ensure that the power is switched off or the power cord is detached from the power supply.
Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

2.3 CPU Installation

For the installation of Intel 1155-Pin CPU, please follow the steps below.

1155-Pin Socket Overview

Before you insert the 1155-Pin CPU into the socket, please check if the CPU surface is unclean or if there is any bent pin on the socket. Do not force to insert the CPU into the socket if above situation is found. Otherwise, the CPU will be seriously damaged.

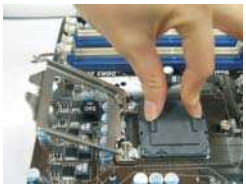
Step 1. Open the socket:

Step 1-1. Disengaging the lever by depressing down and out on the hook to clear retention tab.

Step 1-2. Rotate the load lever to fully open position at approximately 135 degrees.

Step 1-3. Rotate the load plate to fully open position at approximately 100 degrees.

Step 2. Remove PnP Cap (Pick and Place Cap).

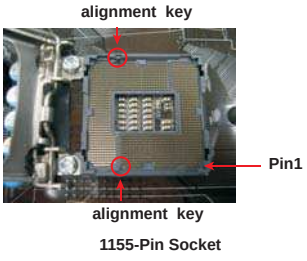


1. It is recommended to use the cap tab to handle and avoid kicking off the PnP cap.
2. This cap must be placed if returning the motherboard for after service.

Step 3. Insert the 1155-Pin CPU:

Step 3-1. Hold the CPU by the edge where is marked with black line.

Step 3-2. Orient the CPU with IHS (Integrated Heat Sink) up. Locate Pin1 and the two orientation key notches.



For proper inserting, please ensure to match the two orientation key notches of the CPU with the two alignment keys of the socket.

Step 3-3. Carefully place the CPU into the socket by using a purely vertical motion.

Step 3-4. Verify that the CPU is within the socket and properly mated to the orient keys.

Step 4. Close the socket:

Step 4-1. Rotate the load plate onto the IHS.

Step 4-2. While pressing down lightly on load plate, engage the load lever.

2.4 Installation of CPU Fan and Heatsink

This motherboard is equipped with 1155-Pin socket that supports Intel 1155-Pin CPU. Please adopt the type of heatsink and cooling fan compliant with Intel 1155-Pin CPU to dissipate heat. Before you installed the heatsink, you need to spray thermal interface material between the CPU and the heatsink to improve heat dissipation. Ensure that the CPU and the heatsink are securely fastened and in good contact with each other. Then connect the CPU fan to the CPU_FAN connector (CPU_FAN1, see page 12, No. 2).

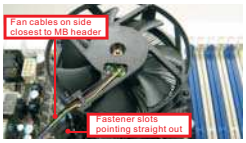
For proper installation, please kindly refer to the instruction manuals of your CPU fan and heatsink.

Below is an example to illustrate the installation of the heatsink for 1155-Pin CPU.

Step 1. Apply thermal interface material onto center of IHS on the socket surface.

Step 2. Place the heatsink onto the socket. Ensure fan cables are oriented on side closest to the CPU fan connector on the motherboard (CPU_FAN1, see page 12, No. 2).

Step 3. Align fasteners with the motherboard through-holes.



Step 4. Rotate the fastener clockwise, then press down on fastener caps with thumb to install and lock. Repeat with remaining fasteners.

If you press down the fasteners without rotating them clockwise, the heatsink cannot be secured on the motherboard.

Step 5. Connect fan header with the CPU fan connector on the motherboard.

Step 6. Secure excess cable with tie-wrap to ensure cable does not interfere with fan operation or contact other components.

Please be noticed that this motherboard supports Combo Cooler Option (C.C.O.), which provides the exible option to adopt three different CPU cooler types, Socket LGA 775, LGA 1155 and LGA 1156. The white throughholes are for Socket LGA 1155/1156 CPU fan.

2.5 Installation of Memory Modules (DIMM)

This motherboard provides four 240-pin DDR3 (Double Data Rate 3) DIMM slots, and supports Dual Channel Memory Technology. For dual channel con- guration, you always need to install **identical** (the same brand, speed, size and chip-type) DDR3 DIMM pair in the slots of the same color. In other words, you have to install **identical** DDR3 DIMM pair in **Dual Channel A** (DDR3_ A1 and DDR3_B1; Blue slots; see p.12 No.5) or **identical** DDR3 DIMM pair in **Dual Channel B** (DDR3_A2 and DDR3_B2; White slots; see p.12 No.6), so that Dual Channel Memory Technology can be activated. This motherboard also allows you to install four DDR3 DIMMs for dual channel con guration, and please install **identical** DDR3 DIMMs in all four slots. You may refer to the Dual Channel Memory Con guration Table below.

Dual Channel Memory Configurations

	DDR3_A1 (Blue Slot)	DDR3_A2 (White Slot)	DDR3_B1 (Blue Slot)	DDR3_B2 (White Slot)
(1)	Populated	-	Populated	-
(2)	-	Populated	-	Populated
(3)*	Populated	Populated	Populated	Populated

* For the con guration (3), please install **identical** DDR3 DIMMs in all four slots.

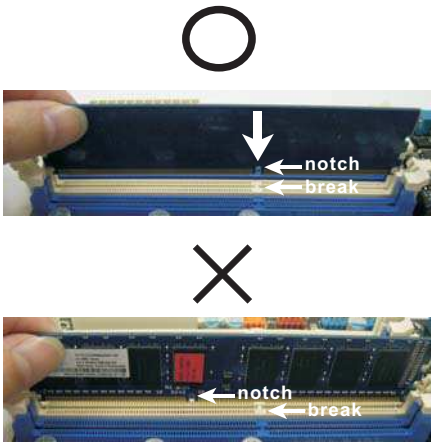
1. If you want to install two memory modules, for optimal compatibility and reliability, it is recommended to install them in the slots of the same color. In other words, install them either in the set of blue slots (DDR3_A1 and DDR3_B1), or in the set of white slots (DDR3_ A2 and DDR3_B2).
2. If only one memory module or three memory modules are installed in the DDR3 DIMM slots on this motherboard, it is unable to activate the Dual Channel Memory Technology.
3. If a pair of memory modules is NOT installed in the same Dual Channel, for example, installing a pair of memory modules in DDR3_A1 and DDR3_A2, it is unable to activate the Dual Channel Memory Technology .
4. It is not allowed to install a DDR or DDR2 memory module into DDR3 slot; otherwise, this motherboard and DIMM may be damaged.
5. Some DDR3 1GB double-sided DIMMs with 16 chips may not work on this motherboard. It is not recommended to install them on this motherboard.

Installing a DIMM

Please make sure to disconnect power supply before adding or removing DIMMs or the system components.

Step 1. Unlock a DIMM slot by pressing the retaining clips outward.

Step 2. Align a DIMM on the slot such that the notch on the DIMM matches the break on the slot.



The DIMM only ts in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.

Step 3. Firmly insert the DIMM into the slot until the retaining clips at both ends fully snap back in place and the DIMM is properly seated.

2.6 Expansion Slots (PCI and PCI Express Slots)

There are 1 PCI slot and 3 PCI Express slots on this motherboard.

PCI slots: PCI slots are used to install expansion cards that have the 32-bit PCI interface.

PCIE slots:

PCIE2 / PCIE3 (PCIE x1 slot; White) is used for PCI Express cards with x1 lane width cards, such as Gigabit LAN card, SATA2 card, etc.
PCIE1 (PCIE x16 slot; Blue) is used for PCI Express x16 lane width graphics cards.

Installing an expansion card

Step 1. Before installing the expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before you start the installation.

Step 2. Remove the system unit cover (if your motherboard is already installed in a chassis).

Step 3. Remove the bracket facing the slot that you intend to use. Keep the screws for later use.

Step 4. Align the card connector with the slot and press rmly until the card is completely seated on the slot.

Step 5. Fasten the card to the chassis with screws.

Step 6. Replace the system cover.

2.7 Dual Monitor and Surround Display Features

Dual Monitor Feature

This motherboard supports dual monitor feature. With the internal VGA output support (DVI-D, D-Sub and HDMI), you can easily enjoy the bene ts of dual monitor feature without installing any add-on VGA card to this motherboard. This motherboard also provides independent display controllers for DVI-D, D-Sub and HDMI to support dual VGA output so that DVI-D, D-sub and HDMI can drive same or different display contents.

To enable dual monitor feature, please follow the below steps:

1. Connect DVI-D monitor cable to VGA/DVI-D port on the I/O panel, connect D-Sub monitor cable to VGA/D-Sub port on the I/O panel, or connect HDMI monitor cable to HDMI port on the I/O panel.

2. If you have installed onboard VGA driver from our support CD to your system already, you can freely enjoy the bene ts of dual monitor function after your system boots. If you haven't installed onboard VGA driver yet, please install onboard VGA driver from our support CD to your system and restart your computer.

D-Sub, DVI-D and HDMI monitors cannot be enabled at the same time. You can only choose the combination: DVI-D + HDMI, DVI-D + D-Sub, or HDMI + D-Sub.

Surround Display Feature

This motherboard supports surround display upgrade. With the internal VGA output support (DVI-D, D-Sub and HDMI) and external add-on PCI Express VGA cards, you can easily enjoy the bene ts of surround display feature.

Please refer to the following steps to set up a surround display environment:

1. Install the PCI Express VGA card on PCIE1 slot. Please refer to page 21 for proper expansion card installation procedures for details.
2. Connect DVI-D monitor cable to VGA/DVI-D port on the I/O panel, connect D-Sub monitor cable to VGA/D-Sub port on the I/O panel, or connect HDMI monitor cable to HDMI port on the I/O panel. Then connect other monitor cables to the corresponding connectors of the add-on PCI Express VGA card on PCIE1 slot.
3. Boot your system. Press <F2> or <Del> to enter BIOS setup. Enter “Onboard VGA Share Memory” option to adjust the memory capability to [32MB], [64MB], [128MB], [256MB] or [512MB] to enable the function of VGA/D-sub. Please make sure that the value you select is less than the total capability of the system memory. If you do not adjust the BIOS setup, the default value of “Onboard VGA Share Memory”, [Auto], will disable VGA/D-Sub function when the add-on VGA card is inserted to this motherboard.
4. Install the onboard VGA driver and the add-on PCI Express VGA card driver to your system. If you have installed the drivers already, there is no need to install them again.
5. Set up a multi-monitor display.

For Windows® XP / XP 64-bit OS:

Right click the desktop, choose “Properties”, and select the “Settings” tab so that you can adjust the parameters of the multi-monitor according to the steps below.

A. Click the “Identify” button to display a large number on each monitor.

B. Right-click the display icon in the Display Properties dialog that you wish to be your primary monitor, and then select “Primary”. When you use multiple monitors with your card, one monitor will always be Primary, and all additional monitors will be designated as Secondary.

C. Select the display icon identi ed by the number 2.

D. Click “Extend my Windows desktop onto this monitor”.

E. Right-click the display icon and select “Attached”, if necessary.

F. Set the “Screen Resolution” and “Color Quality” as appropriate for the second monitor. Click “Apply” or “OK” to apply these new values.

G. Repeat steps C through E for the diaplay icon identi ed by the number one, two, three and four

For Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS:

Right click the desktop, choose “Personalize”, and select the “Display Settings” tab so that you can adjust the parameters of the multi-monitor according to the steps below.

A. Click the number ”2” icon.

B. Click the items “This is my main monitor” and “Extend the desktop onto this monitor”.

C. Click “OK” to save your change.

D. Repeat steps A through C for the display icon identi ed by the number three and four.

6. Use Surround Display. Click and drag the display icons to positions representing the physical setup of your monitors that you would like to use. The placement of display icons determines how you move items from one monitor to another.

HDCP Function

HDCP function is supported on this motherboard. To use HDCP function with this motherboard, you need to adopt the monitor that supports HDCP function as well. Therefore, you can enjoy the superior display quality with high-de nition HDCP encryption contents. Please refer to below instruction for more details about HDCP function.

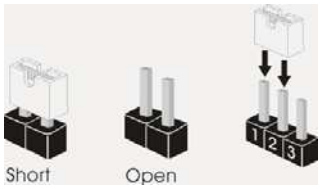
What is HDCP?

HDCP stands for High-Bandwidth Digital Content Protection, a speci cation developed by Intel® for protecting digital entertainment content that uses the DVI interface. HDCP is a copy protection scheme to eliminate the possibility of intercepting digital data midstream between the video source, or transmitter - such as a computer, DVD player or set-top box - and the digital display, or receiver - such as a monitor, television or projector. In other words, HDCP speci cation is designed to protect the integrity of content as it is being transmitted.

Products compatible with the HDCP scheme such as DVD players, satellite and cable HDTV set-top-boxes, as well as few entertainment PCs requires a secure connection to a compliant display. Due to the increase in manufacturers employing HDCP in their equipment, it is highly recommended that the HDTV or LCD monitor you purchase is compatible.

2.8 Jumpers Setup

The illustration shows how jumpers are setup. When the jumper cap is placed on pins, the jumper is “Short”. If no jumper cap is placed on pins, the jumper is “Open”. The illustration shows a 3-pin jumper whose pin1 and pin2 are “Short” when jumper cap is placed on these 2 pins.



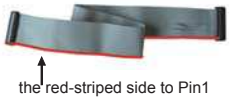
Jumper	Setting	Description
Clear CMOS Jumper (CLRCMOS1) (see p.12, No. 13)	1_2 Default 2_3 Clear CMOS	

Note: CLRCMOS1 allows you to clear the data in CMOS. To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord from the power supply. After waiting for 15 seconds, use a jumper cap to short pin2 and pin3 on CLRCMOS1 for 5 seconds. However, please do not clear the CMOS right after you update the BIOS. If you need to clear the CMOS when you just nish updating the BIOS, you must boot up the system rst, and then shut it down before you do the clear-CMOS action. Please be noted that the password, date, time, user default pro le, 1394 GUID and MAC address will be cleared only if the CMOS battery is removed.

2.9 Onboard Headers and Connectors

Onboard headers and connectors are NOT jumpers. Do NOT place jumper caps over these headers and connectors. Placing jumper caps over the headers and connectors will cause permanent damage of the motherboard!

FDD connector
(33-pin FLOPPY1)
(see p.12 No. 26)

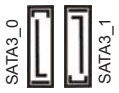


Note: Make sure the red-striped side of the cable is plugged into Pin1 side of the connector.

Serial ATAII Connectors
(SATA2_2: see p.12, No. 14)
(SATA2_3: see p.12, No. 15)
(SATA2_4: see p.12, No. 16)

These three Serial ATAII (SATAII) connectors support SATA data cables for internal storage devices. The current SATAII interface allows up to 3.0 Gb/s data transfer rate.

Serial ATA3 Connectors
(SATA3_0: see p.12, No. 10)
(SATA3_1: see p.12, No. 9)



These two Serial ATA3 (SATA3) connectors support SATA data cables for internal storage devices. The current SATA3 interface allows up to 6.0 Gb/s data transfer rate.

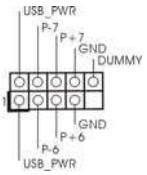
Serial ATA (SATA) Data Cable
(Optional)

Either end of the SATA data cable can be connected to the SATA / SATAII / SATA3 hard disk or the SATAII / SATA3 connector on this motherboard.

USB 2.0 Headers

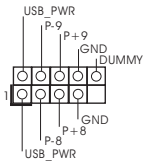
(9-pin USB6_7)

(see p.12 No. 22)



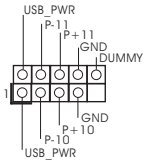
(9-pin USB8_9)

(see p.12 No. 20)



(9-pin USB10_11)

(see p.12 No. 21)

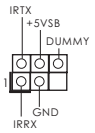


Besides four default USB 2.0 ports on the I/O panel, there are three USB 2.0 headers on this motherboard. Each USB 2.0 header can support two USB 2.0 ports.

Infrared Module Header

(5-pin IR1)

(see p.12 No. 24)

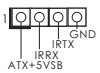


This header supports an optional wireless transmitting and receiving infrared module.

Consumer Infrared Module Header

(4-pin CIR1)

(see p.12 No. 23)

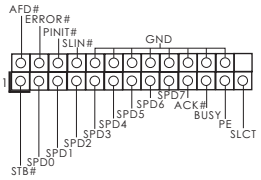


This header can be used to connect the remote controller receiver.

Print Port Header

(25-pin LPT1)

(see p.12 No. 25)

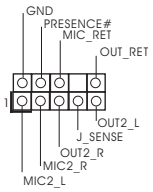


This is an interface for print port cable that allows convenient connection of printer devices.

Front Panel Audio Header

(9-pin HD_AUDIO1)

(see p.12 No. 28)



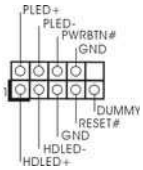
This is an interface for front panel audio cable that allows convenient connection and control of audio devices.

1. High De nition Audio supports Jack Sensing, but the panel wire on the chassis must support HDA to function correctly. Please follow the instruction in our manual and chassis manual to install your system.
2. If you use AC'97 audio panel, please install it to the front panel audio header as below:
   A. Connect Mic_IN (MIC) to MIC2_L.
   B. Connect Audio_R (RIN) to OUT2_R and Audio_L (LIN) to OUT2_L.
   C. Connect Ground (GND) to Ground (GND).
   D. MIC_RET and OUT_RET are for HD audio panel only. You don't need to connect them for AC'97 audio panel.
   E. To activate the front mic.
      For Windows® XP / XP 64-bit OS:
      Select "Mixer". Select "Recorder". Then click "FrontMic".
      For Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS:
      Go to the "FrontMic" Tab in the Realtek Control panel. Adjust "Recording Volume".

System Panel Header

(9-pin PANEL1)

(see p.12 No. 17)



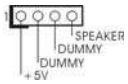
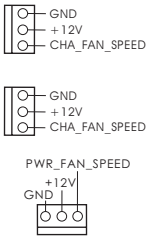
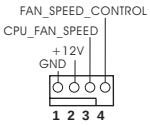
This header accommodates several system front panel functions.

Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.

PWRBTN (Power Switch):
Connect to the power switch on the chassis front panel. You may con gure the way to turn off your system using the power switch.
RESET (Reset Switch):
Connect to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.
PLED (System Power LED):
Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED keeps blinking when the system is in S1 sleep state. The LED is off when the system is in S3/S4 sleep state or powered off (S5).

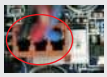
HDLED (Hard Drive Activity LED):
Connect to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.

The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assign-ments are matched correctly.

Chassis Speaker Header (4-pin SPEAKER 1) (see p.12 No. 18)		Please connect the chassis speaker to this header.
Power LED Header (3-pin PLED1) (see p.12 No. 19)		Please connect the chassis power LED to this header to indicate system power status. The LED is on when the system is operating. The LED keeps blinking in S1 state. The LED is off in S3/S4 state or S5 state (power off).
Chassis and Power Fan Connectors (3-pin CHA_FAN1) (see p.12 No. 8) (3-pin CHA_FAN2) (see p.12 No. 34) (3-pin PWR_FAN1) (see p.12 No. 1)		Please connect the fan cables to the fan connectors and match the black wire to the ground pin.
CPU Fan Connectors (4-pin CPU_FAN1) (see p.12 No. 2)		Please connect the CPU fan cable to the connector and match the black wire to the ground pin.

Though this motherboard provides 4-Pin CPU fan (Quiet Fan) support, the 3-Pin CPU fan still can work successfully even without the fan speed control function. If you plan to connect the 3-Pin CPU fan to the CPU fan connector on this motherboard, please connect it to Pin 1-3.

Pin 1-3 Connected ←

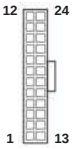


3-Pin Fan Installation

ATX Power Connector

(24-pin ATXPWR1)

(see p.12 No. 7)



Please connect an ATX power supply to this connector.

Though this motherboard provides 24-pin ATX power connector, it can still work if you adopt a traditional 20-pin ATX power supply. To use the 20-pin ATX power supply, please plug your power supply along with Pin 1 and Pin 13.

20-Pin ATX Power Supply Installation

ATX 12V Power Connector

(8-pin ATX12V1)

(see p.12 No. 3)

Please connect an ATX 12V power supply to this connector.

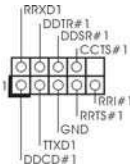
Though this motherboard provides 8-pin ATX 12V power connector, it can still work if you adopt a traditional 4-pin ATX 12V power supply. To use the 4-pin ATX power supply, please plug your power supply along with Pin 1 and Pin 5.

4-Pin ATX 12V Power Supply Installation

Serial port Header

(9-pin COM1)

(see p.12 No. 27)



This COM1 header supports a serial port module.

HDMI_SPDIF Header

(2-pin HDMI_SPDIF1)

(see p.12 No. 29)

HDMI_SPDIF header, providing SPDIF audio output to HDMI VGA card, allows the system to connect HDMI Digital TV/ projector/LCD devices. Please connect the HDMI_SPDIF connector of HDMI VGA card to this header.

2.10 Serial ATA (SATA) / Serial ATAII (SATAII) Hard Disks Installation

This motherboard adopts Intel® H67 chipset that supports Serial ATA (SATA) / Serial ATAII (SATAII) hard disks and RAID (RAID 0, RAID 1, RAID 10, RAID 5 and Intel Rapid Storage) functions. You may install SATA / SATAII hard disks on this motherboard for internal storage devices. This section will guide you to install the SATA / SATAII hard disks.

STEP 1: Install the SATA / SATAII hard disks into the drive bays of your chassis.
STEP 2: Connect the SATA power cable to the SATA / SATAII hard disk.
STEP 3: Connect one end of the SATA data cable to the motherboard's SATAII connector.
STEP 4: Connect the other end of the SATA data cable to the SATA / SATAII hard disk.

2.11 Serial ATA3 (SATA3) Hard Disks Installation

This motherboard adopts Intel® H67 chipset that supports Serial ATA3 (SATA3) hard disks and RAID (RAID 0, RAID 1, RAID 10, RAID 5 and Intel Rapid Storage) functions. You may install SATA3 hard disks on this motherboard for internal storage devices. This section will guide you to install the SATA3 hard disks.

STEP 1: Install the SATA3 hard disks into the drive bays of your chassis.
STEP 2: Connect the SATA power cable to the SATA3 hard disk.
STEP 3: Connect one end of the SATA data cable to the motherboard's SATA3 connector.
STEP 4: Connect the other end of the SATA data cable to the SATA3 hard disk.

2.12 Hot Plug and Hot Swap Functions for SATA / SATAII HDDs

This motherboard supports Hot Plug and Hot Swap functions for SATA / SATAII in RAID / AHCI mode. Intel® H67 chipset provides hardware support for Advanced Host controller Interface (AHCI), a new programming interface for SATA host controllers developed thru a joint industry effort.

NOTE

What is Hot Plug Function?

If the SATA / SATAII HDDs are NOT set for RAID con guration, it is called "Hot Plug" for the action to insert and remove the SATA / SATAII HDDs while the system is still power-on and in working condition.
However, please note that it cannot perform Hot Plug if the OS has been installed into the SATA / SATAII HDD.

What is Hot Swap Function?

If SATA / SATAII HDDs are built as RAID 1 or RAID 5 then it is called "Hot Swap" for the action to insert and remove the SATA / SATAII HDDs while the system is still power-on and in working condition.

2.13 Hot Plug and Hot Swap Functions for SATA3 HDDs

This motherboard supports Hot Plug and Hot Swap functions for SATA3 in RAID / AHCI mode. Intel® H67 chipset provides hardware support for Advanced Host controller Interface (AHCI), a new programming interface for SATA host controllers developed thru a joint industry effort.

NOTE

What is Hot Plug Function?

If the SATA3 HDDs are NOT set for RAID con guration, it is called "Hot Plug" for the action to insert and remove the SATA3 HDDs while the system is still power-on and in working condition.
However, please note that it cannot perform Hot Plug if the OS has been installed into the SATA3 HDD.

What is Hot Swap Function?

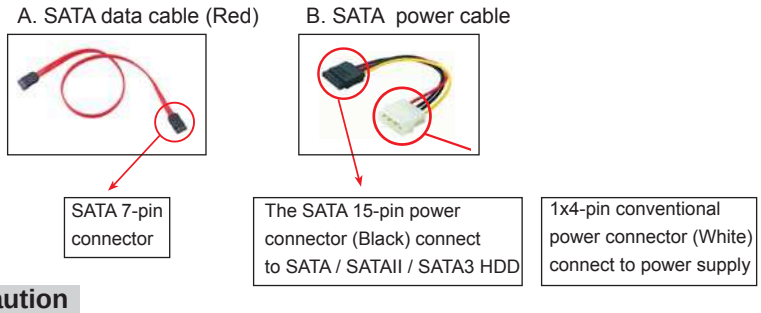
If SATA3 HDDs are built as RAID 1 or RAID 5 then it is called "Hot Swap" for the action to insert and remove the SATA3 HDDs while the system is still power-on and in working condition.

2.14 SATA / SATAII / SATA3 HDD Hot Plug Feature and Operation Guide

This motherboard supports Hot Plug feature for SATA / SATAII / SATA3 HDD in RAID / AHCI mode. Please read below operation guide of Hot Plug feature carefully. Before you process the SATA / SATAII / SATA3 HDD Hot Plug, please check below cable accessories from the motherboard gift box pack.

A. 7-pin SATA data cable

B. SATA power cable with SATA 15-pin power connector interface


A. SATA data cable (Red)
B. SATA power cable
SATA 7-pin connector
The SATA 15-pin power connector (Black) connect to SATA / SATAII / SATA3 HDD
1x4-pin conventional power connector (White) connect to power supply

Caution

1. Without SATA 15-pin power connector interface, the SATA / SATAII / SATA3 Hot Plug cannot be processed.
2. Even some SATA / SATAII / SATA3 HDDs provide both SATA 15-pin power connector and IDE 1x4-pin conventional power connector interfaces, the IDE 1x4-pin conventional power connector interface is de nitely not able to support Hot Plug and will cause the HDD damage and data loss.

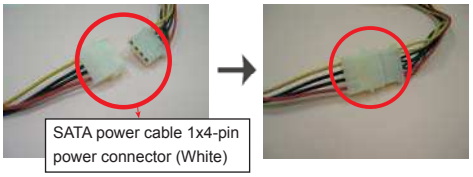
Points of attention, before you process the Hot Plug:

1. Below operation procedure is designed only for our motherboard, which supports SATA / SATAII / SATA3 HDD Hot Plug.
   * The SATA / SATAII / SATA3 Hot Plug feature might not be supported by the chipset because of its limitation, the SATA / SATAII / SATA3 Hot Plug support information of our motherboard is indicated in the product spec on our website: www.asrock.com
2. Make sure your SATA / SATAII / SATA3 HDD can support Hot Plug function from your dealer or HDD user manual. The SATA / SATAII / SATA3 HDD, which cannot support Hot Plug function, will be damaged under the Hot Plug operation.
3. Please make sure the SATA / SATAII / SATA3 driver is installed into system properly. The latest SATA / SATAII / SATA3 driver is available on our support website: www.asrock.com
4. Make sure to use the SATA power cable & data cable, which are from our motherboard package.
5. Please follow below instructions step by step to reduce the risk of HDD crash or data loss.

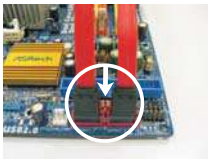
How to Hot Plug a SATA / SATAII / SATA3 HDD:

Points of attention, before you process the Hot Plug:
Please do follow below instruction sequence to process the Hot Plug, improper procedure will cause the SATA / SATAII / SATA3 HDD damage and data loss.

Step *1* Please connect SATA power cable 1x4-pin end (White) to the power supply 1x4-pin cable.



Step *2* Connect SATA data cable to the motherboard's SATAII / SATA3 connector.



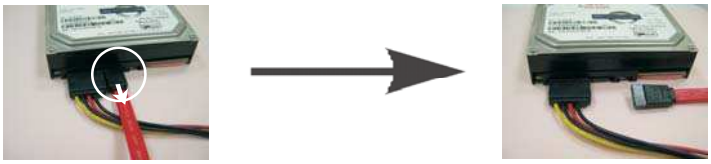
Step *3* Connect SATA 15-pin power cable connector (Black) end to SATA / SATAII / SATA3 HDD.

Step *4* Connect SATA data cable to the SATA / SATAII / SATA3 HDD.

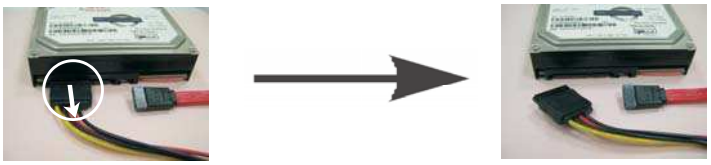
How to Hot Unplug a SATA / SATAII / SATA3 HDD:

Points of attention, before you process the Hot Unplug:
Please do follow below instruction sequence to process the Hot Unplug, improper procedure will cause the SATA / SATAII / SATA3 HDD damage and data loss.

Step *1* Unplug SATA data cable from SATA / SATAII / SATA3 HDD side.



Step *2* Unplug SATA 15-pin power cable connector (Black) from SATA / SATAII / SATA3 HDD side.



2.15 Driver Installation Guide

To install the drivers to your system, please insert the support CD to your optical drive first. Then, the drivers compatible to your system can be auto-detected and listed on the support CD driver page. Please follow the order from up to bottom side to install those required drivers. Therefore, the drivers you install can work properly.

2.16 Installing Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP 64-bit With RAID Functions

If you want to install Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP 64-bit OS on your SATA / SATAII / SATA3 HDDs with RAID functions, please follow below procedures according to the OS you install.

2.16.1 Installing Windows® XP / XP 64-bit With RAID Functions

If you want to install Windows® XP / XP 64-bit on your SATA / SATAII / SATA3 HDDs with RAID functions, please follow below steps.

STEP 1: Set up BIOS.

A. Enter BIOS SETUP UTILITY → Advanced screen → SATA Configuration.

B. Set the option "SATA Mode" to [RAID].

STEP 2: Make a SATA / SATAII / SATA3 Driver Diskette.

A. Insert the Support CD into your optical drive to boot your system.

B. During POST at the beginning of system boot-up, press <F11> key, and then a window for boot devices selection appears. Please select CD-ROM as the boot device.

C. When you see the message on the screen, "Do you want to generate Serial ATA driver diskette [YN]?", press <Y>.

D. Then you will see these messages,

Please insert a diskette into the floppy drive.
WARNING! Formatting the floppy diskette will
lose ALL data in it!
Start to format and copy files [YN]?
Please insert a floppy diskette into the floppy drive, and press <Y>.

E. The system will start to format the floppy diskette and copy SATA / SATAII / SATA3 drivers into the floppy diskette.

STEP 3: Use "RAID Installation Guide" to set RAID configuration.
Before you start to con gure the RAID function, you need to check the installation guide in the Support CD for proper con guration. Please refer to the document in the Support CD, "Guide to SATA Hard Disks Installation and RAID Con guration", which is located in the folder at the following path:
.. \ RAID Installation Guide
STEP 4: Install Windows® XP / XP 64-bit OS on your system.
After making a SATA / SATAII / SATA3 driver diskette and using "RAID Installation Guide" to set RAID con guration, you can start to install Windows® XP / XP 64-bit on your system. At the beginning of Windows setup, press F6 to install a third-party RAID driver. When prompted, insert the SATA / SATAII / SATA3 driver diskette containing the Intel® RAID driver. After reading the oppy disk, the driver will be presented. Select the driver to install according to the mode you choose and the OS you install.

After the installation of Windows® XP / XP-64bit OS, if you want to manage RAID functions, you are allowed to use both "RAID Installation Guide" and "Intel Rapid Storage Information" for RAID con guration. Please refer to the document in the Support CD, "Guide to SATA Hard Disks Installation and RAID Con guration", which is located in the folder at the following path: **.. \ RAID Installation Guide** and the document in the support CD, "Guide to Intel Rapid Storage", which is located in the folder at the following path:
.. \ Intel Rapid Storage Information

If you want to use "Intel Rapid Storage" in Windows® environment, please install "SATAII driver" from the Support CD again so that "Intel Rapid Storage" will be installed to your system as well.

2.16.2 Setting Up a "RAID Ready" System

You can also set up a "RAID Ready" system with a single SATA / SATAII / SATA3 hard disk. A "RAID Ready" system can be seamlessly upgraded to RAID 0, RAID 1 or RAID 5 at a later date by using RAID migration feature of Intel Rapid Storage. The following steps outline how to build an Intel "RAID Ready" system.

1. Assemble the system and attach a single SATA / SATAII / SATA3 hard drive.
2. Set up system BIOS as step 1 of page 35. When done, exit Setup.
3. Make a SATA / SATAII / SATA3 driver diskette as step 2 of page 35. Begin Windows® setup by booting from the installation CD.
4. At the beginning of Windows® setup, press F6 to install a third-party RAID driver. When prompted, insert the SATA / SATAII / SATA3 driver diskette containing the Intel® RAID driver. After reading the oppy disk, the driver will be presented. Select the driver to install according to the mode you choose and the OS you install.

5. Finish the Windows® installation and install all necessary drivers.
6. Install the Intel(R) Rapid Storage software via the CD-ROM included with your motherboard or after downloading it from the Internet. This will add the Intel(R) Rapid Storage Console which can be used to manage the RAID con guration.
7. After setting up a “RAID Ready” system as the above steps, you can follow the procedures of the next section to migrate the system to RAID 0, RAID 1 or RAID 5.

2.16.3 Migrating a “RAID Ready” System to RAID 0, RAID 1 or RAID 5

If you have an existing “RAID Ready” system, then you can use the following steps to perform a migration from a single non-RAID con guration to a two drive RAID 0, RAID 1 con guration or three drive RAID 5 con guration. To prepare for this, you will need another SATA / SATAII hard drive with a capacity equal to or greater than that currently being used as the source hard drive.

1. Physically attach one additional SATA / SATAII / SATA3 hard drive to the SATAII / SATA3 port not being used. Note the serial number of the hard drive already in the system; you will use this to select it as the source hard drive when initiating the migration.
2. Boot Windows®, install the Intel(R) Rapid Storage software, if not already installed, using the setup package obtained from a CD-ROM or from the Internet. This will install the necessary Intel Storage Utility and start menu links.
3. Open the Intel Storage Utility from the Start Menu and select “Create RAID volume from Existing Hard Drive” from the Actions menu. This will activate the Create RAID volume from Existing Hard Drive Wizard. Click through the dialogs as prompted. It’s important to understand what will occur during the migration process because any data on the destination hard drive will be lost.
4. Once the migration is complete, reboot the system. If you migrated to a RAID 0 volume, use Disk Management from within Windows® in order to partition and format the empty space created when the two hard drive capacities are combined. You may also use third-party software to extend any existing partitions within the RAID volume.

2.16.4 Installing Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit With RAID Functions

If you want to install Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit on your SATA / SATAII / SATA3 HDDs with RAID functions, please follow below steps.

STEP 1: Set up BIOS.

A. Enter BIOS SETUP UTILITY → Advanced screen → SATA Con guration.

B. Set the option "SATA Mode" to [RAID].

STEP 2: Use "RAID Installation Guide" to set RAID configuration.

Before you start to con gure the RAID function, you need to check the installation guide in the Support CD for proper con guration. Please refer to the document in the Support CD, "Guide to SATA Hard Disks Installation and RAID Con guration", which is located in the folder at the following path:

.. \ RAID Installation Guide

STEP 3: Install Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS on your system.

After the installation of Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS, if you want to manage RAID functions, you are allowed to use both "RAID Installation Guide" and "Intel Rapid Storage Information" for RAID con guration. Please refer to the document in the Support CD, "Guide to SATA Hard Disks Installation and RAID Con guration", which is located in the folder at the following path: **.. \ RAID Installation Guide** and the document in the support CD, "Guide to Intel Rapid Storage", which is located in the folder at the following path: **.. \ Intel Rapid Storage Information**

If you want to use "Intel Rapid Storage" in Windows® environment, please install "SATAII driver" from the Support CD again so that "Intel Rapid Storage" will be installed to your system as well.

2.17 Installing Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP 64-bit Without RAID Functions

If you want to install Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP 64-bit OS on your SATA / SATAII / SATA3 HDDs without RAID functions, please follow below procedures according to the OS you install.

2.17.1 Installing Windows® XP / XP 64-bit Without RAID Functions

If you want to install Windows® XP / XP 64-bit OS on your SATA / SATAII / SATA3 HDDs without RAID functions, please follow below steps.

Using SATA / SATAII / SATA3 HDDs with NCQ function

STEP 1: Set Up BIOS.

A. Enter BIOS SETUP UTILITY → Advanced screen → SATA Con guration.

B. Set the option "SATA Mode" to [AHCI].

STEP 2: Make a SATA / SATAII / SATA3 driver diskette.

Please make a SATA / SATAII / SATA3 driver diskette by following section 2.16.1 step 2 on page 35.

STEP 3: Install Windows® XP / XP 64-bit OS on your system.

After making a SATA / SATAII / SATA3 driver diskette, you can start to install Windows® XP / XP 64-bit on your system. At the beginning of Windows® setup, press F6 to install a third-party AHCI driver. When prompted, insert the SATA / SATAII / SATA3 driver diskette containing the Intel® AHCI driver. After reading the oppy disk, the driver will be presented. Select the driver to install according to the mode you choose and the OS you install.

Using SATA / SATAII / SATA3 HDDs without NCQ function

STEP 1: Set up BIOS.

A. Enter BIOS SETUP UTILITY → Advanced screen → SATA Con guration.

B. Set the option "SATA Mode" to [IDE].

STEP 2: Install Windows® XP / XP 64-bit OS on your system.

2.17.2 Installing Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit Without RAID Functions

If you want to install Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS on your SATA / SATAII / SATA3 HDDs without RAID functions, please follow below steps.

Using SATA / SATAII / SATA3 HDDs with NCQ function

STEP 1: Set Up BIOS.

A. Enter BIOS SETUP UTILITY → Advanced screen → SATA Con guration.

B. Set the option "SATA Mode" to [AHCI].

STEP 2: Install Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS on your system.

Using SATA / SATAII / STA3 HDDs without NCQ function

STEP 1: Set up BIOS.

A. Enter BIOS SETUP UTILITY → Advanced screen → SATA Con guration.

B. Set the option "SATA Mode" to [IDE].

STEP 2: Install Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS on your system.

Chapter 3: UEFI SETUP UTILITY

3.1 Introduction

This section explains how to use the UEFI SETUP UTILITY to con gure your system. The UEFI chip on the motherboard stores the UEFI SETUP UTILITY. You may run the UEFI SETUP UTILITY when you start up the computer. Please press <F2> or <Del> during the Power-On-Self-Test (POST) to enter the UEFI SETUP UTILITY, otherwise, POST will continue with its test routines.

If you wish to enter the UEFI SETUP UTILITY after POST, restart the system by pressing <Ctl> + <Alt> + <Delete>, or by pressing the reset button on the system chassis. You may also restart by turning the system off and then back on.

Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen.

3.1.1 UEFI Menu Bar

The top of the screen has a menu bar with the following selections:

Main	To set up the system time/date information
Advanced	To set up the advanced UEFI features
H/W Monitor	To display current hardware status
Boot	To set up the default system device to locate and load the Operating System
Security	To set up the security features
Exit	To exit the current screen or the UEFI SETUP UTILITY

Use <← > key or < → > key to choose among the selections on the menu bar, and then press <Enter> to get into the sub screen. You can also use the mouse to click your required item.

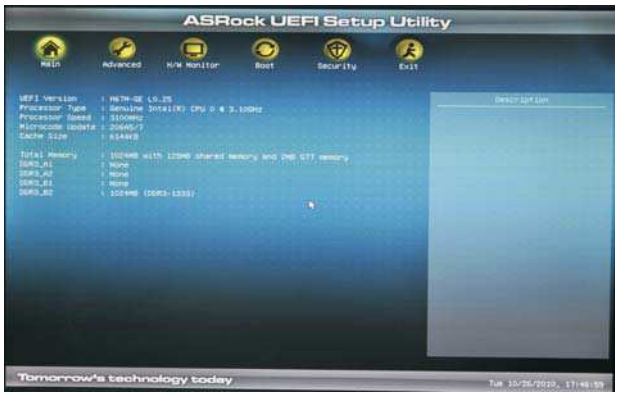
3.1.2 Navigation Keys

Please check the following table for the function description of each navigation key.

Navigation Key(s)	Function Description
← / →	Moves cursor left or right to select Screens
↑ / ↓	Moves cursor up or down to select items
+ / -	To change option for the selected items
<Enter>	To bring up the selected screen
<F1>	To display the General Help Screen
<F9>	To load optimal default values for all the settings
<F10>	To save changes and exit the UEFI SETUP UTILITY
<ESC>	To jump to the Exit Screen or exit the current screen

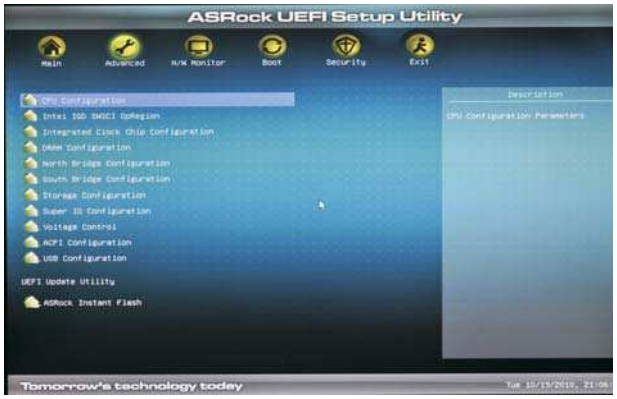
3.2 Main Screen

When you enter the UEFI SETUP UTILITY, the Main screen will appear and display the system overview.



3.3 Advanced Screen

In this section, you may set the con gurations for the following items: CPU Con guration, Intel IGD SWSCI OpRegion Con guration, Integrated Clock Chip Con guration, DRAM Con guration, North Bridge Con guration, South Bridge Con guration, Storage Con guration, Super IO Con guration, Voltage Con guration, ACPI Con guration and USB Con guration.



Setting wrong values in this section may cause the system to malfunction.

ASRock Instant Flash

ASRock Instant Flash is a UEFI flash utility embedded in Flash ROM. This convenient UEFI update tool allows you to update system UEFI without entering operating systems rst like MS-DOS or Windows®. Just launch this tool and save the new UEFI le to your USB ash drive, oppy disk or hard drive, then you can update your UEFI only in a few clicks without preparing an additional oppy diskette or other complicated ash utility. Please be noted that the USB ash drive or hard drive must use FAT32/16/12 le system. If you execute ASRock Instant Flash utility, the utility will show the UEFI les and their respective information. Select the proper UEFI le to update your UEFI, and reboot your system after UEFI update process completes.

3.3.1 CPU Configuration

CPU Ratio Setting

Use this item to change the ratio value of this motherboard.

Intel SpeedStep Technology

Intel SpeedStep technology is Intel's new power saving technology. Processor can switch between multiple frequency and voltage points to enable power savings. The default value is [Enabled]. Con guration options: [Auto], [Enabled] and [Disabled]. If you install Windows® XP and select [Auto], you need to set the "Power Schemes" as "Portable/Laptop" to enable this function. If you install Windows® Vista™ / 7 and want to enable this function, please set this item to [Enabled]. This item will be hidden if the current CPU does not support Intel SpeedStep technology.

Please note that enabling this function may reduce CPU voltage and lead to system stability or compatibility issue with some power supplies. Please set this item to [Disable] if above issue occurs.

Intel Turbo Boost Technology

Use this item to enable or disable Intel Turbo Boost Technology. Turbo Boost allows processor cores to run faster than marked frequency in speci c condition. The default value is [Enabled].

Turbo Boost Power Limit

Use this item to adjust Turbo Boost power limit. Con guration options: [Auto] and [Manual]. The default value is [Auto].

Core Current Limit

Use this item to add voltage when CPU is in Turbo mode.

Intel Hyper Threading Technology

To enable this feature, it requires a computer system with an Intel processor that supports Hyper-Threading technology and an operating

system that includes optimization for this technology, such as Microsoft® Windows® XP / Vista™ / 7. Set to [Enabled] if using Microsoft® Windows® XP, Vista™, 7, or Linux kernel version 2.4.18 or higher. This option will be hidden if the installed CPU does not support Hyper-Threading technology.

Active Processor Cores

Use this item to select the number of cores to enable in each processor package. Con guration options: [All], [1] and [2]. The default value is [All].

Hardware Prefetcher

Use this item to turn on/off the MLC streamer prefetcher.

Adjacent Cache Line Prefetch

Use this item to turn on/off prefetching of adjacent cache lines.

Enhance Halt State (C1E)

All processors support the Halt State (C1). The C1 state is supported through the native processor instructions HLT and MWAIT and requires no hardware support from the chipset. In the C1 power state, the processor maintains the context of the system caches.

CPU C3 State Support

Use this to enable or disable CPU C3 (ACPI C2) report to OS.

CPU C6 State Support

Use this to enable or disable CPU C6 (ACPI C3) report to OS.

Package C State Support

Selected option will program into C State package limit register. The default value is [Auto].

CPU Thermal Throttling

You may select [Enabled] to enable CPU internal thermal control mechanism to keep the CPU from overheated.

Intel Virtualization Technology

When this option is set to [Enabled], a VMM (Virtual Machine Architecture) can utilize the additional hardware capabilities provided by Vanderpool Technology. This option will be hidden if the installed CPU does not support Intel Virtualization Technology.

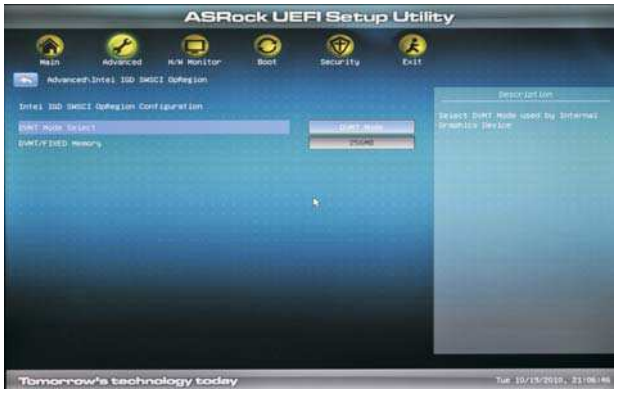
No-Excute Memory Protection

No-Execution (NX) Memory Protection Technology is an enhancement to the IA-32 Intel Architecture. An IA-32 processor with “No Execute (NX) Memory Protection” can prevent data pages from being used by malicious software to execute code. This option will be hidden if the current CPU does not support No-Excute Memory Protection.

Local x2APIC

Use this to enable or disable Local x2APIC. The default value is [Disabled]. Please be noted that some OS do not support this function.

3.3.2 Intel IGD SWSCI OpRegion Configuration



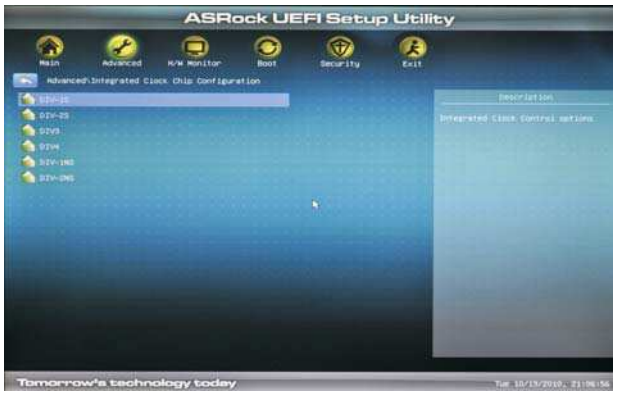
DVMT Mode Select

Use this option to adjust DVMT mode. The default value is [DVMT Mode]. DVMT (Dynamic Video Memory Technology) is an architecture that offers breakthrough performance for the motherboard through ef cient memory utilization. In DVMT mode, the graphics driver allocates memory as needed for running graphics applications and is cooperatively using this memory with other system components. This item will not be used under Windows® Vista™ / 7 OS because the driver will intelligently detect physical memory available and allocate necessary video memory.

DVMT Memory

You are allowed to adjust the shared memory size in this item. Configuration options: [128MB], [256MB] and [Maximum]. The option [Maximum] only appears when you adopt the memory module with 1024MB or above.

3.3.3 Integrated Clock Chip Configuration



DIV-1S

Integrated Clock Control options.

DIV-2S

Integrated Clock Control options.

DIV3

Integrated Clock Control options.

DIV4

Integrated Clock Control options.

DIV-1NS

Integrated Clock Control options.

DIV-2NS

Integrated Clock Control options.

3.3.4 DRAM Configuration

DRAM Frequency

If [Auto] is selected, the motherboard will detect the memory module(s) inserted and assigns appropriate frequency automatically.

CAS# Latency (tCL)

Use this item to change CAS# Latency (tCL) Auto/Manual setting. The default is [Auto].

RAS# to CAS# Delay (tRCD)

Use this item to change RAS# to CAS# Delay (tRCD) Auto/Manual setting. The default is [Auto].

Row Precharge Time (tRP)

Use this item to change Row Precharge Time (tRP) Auto/Manual setting. The default is [Auto].

RAS# Active Time (tRAS)

Use this item to change RAS# Active Time (tRAS) Auto/Manual setting. The default is [Auto].

Command Rate (CR)

Use this item to change Command Rate (CR) Auto/Manual setting. Min: 1N. Max: 2N. The default is [Auto].

Write Recovery Time (tWR)

Use this item to change Write Recovery Time (tWR) Auto/Manual setting. The default is [Auto].

Refresh Cyle Time (tRFC)

Use this item to change Refresh Cyle Time (tRFC) Auto/Manual setting. The default is [Auto].

RAS to RAS Delay (tRRD)

Use this item to change RAS to RAS Delay (tRRD) Auto/Manual setting. The default is [Auto].

Write to Read Delay (tWTR)

Use this item to change Write to Read Delay (tWTR) Auto/Manual setting. The default is [Auto].

Read to Precharge (tRTP)

Use this item to change Read to Precharge (tRTP) Auto/Manual setting. The default is [Auto].

Four Activate Window (tFAW)

Use this item to change Four Activate Window (tFAW) Auto/Manual setting. The default is [Auto].

Memory Power Down Mode

Use this item to adjust DDR power down mode. Configuration options: [Auto], [Slow] and [Fast]. The default value is [Auto].

3.3.5 North Bridge Configuration

Low MMIO Align

Low MMIO resources align at 64MB/1024MB. The default value is [64MB].

VT-d

Use this to enable or disable Intel® VT-d technology (Intel® Virtualization Technology for Directed I/O). The default value of this feature is [Disabled].

Primary Graphics Adapter

This allows you to select the boot graphic adapter priority. Con guration options: [Onboard], [PCI Express] and [PCI]. The default value is [PCI].

Onboard VGA Share Memory

This allows you to set onboard VGA share memory feature. The default value is [Auto]. Con guration options: [Auto], [32MB], [64MB], [128MB], [256MB] and [512MB].

Render Standby

Use this to enable or disable Render Standby by Internal Graphics Device. The default value is [Enabled].

IGD Multi-Monitor

Use this to enable or disable IGD Multi-Monitor by Internal Graphics Device. The default value is [Disabled].

GT Over Clock

Use this to enable or disable GT Over Clock by Internal Graphics Device. The default value is [Disabled].

3.3.6 South Bridge Configuration

Restore on AC/Power Loss

This allows you to set the power state after an unexpected AC/power loss. If [Power Off] is selected, the AC/power remains off when the power recovers. If [Power On] is selected, the AC/power resumes and the system starts to boot up when the power recovers.

Deep Sx

Mobile platforms support Deep S4/S5 in DC only and desktop platforms support Deep S4/S5 in AC only. Con guration options: [Disabled], [Enabled in S5] and [Enabled in S4 and S5]. The default value is [Disabled].

Onboard LAN

This allows you to enable or disable the “Onboard LAN” feature.

Onboard HD Audio

Select [Auto], [Enabled] or [Disabled] for the onboard HD Audio feature. If you select [Auto], the onboard HD Audio will be disabled when PCI Sound Card is plugged.

Front Panel

Select [Auto] or [Disabled] for the onboard HD Audio Front Panel.

Onboard HDMI HD Audio

This allows you to enable or disable the “Onboard HDMI HD Audio” feature.

ACPI HPET Table

Use this item to enable or disable ACPI HPET Table. The default value is [Enabled]. Please set this option to [Enabled] if you plan to use this motherboard to submit Windows® Vista™ certi cation.

PCI Legacy Mode

Use this item to enable or disable PCI Legacy Mode. The default value is [Enabled].

3.3.7 Storage Configuration

SATA Mode

Use this to select SATA mode. Con guration options: [IDE Mode], [AHCI Mode] and [RAID Mode]. The default value is [IDE Mode].

AHCI (Advanced Host Controller Interface) supports NCQ and other new features that will improve SATA disk performance but IDE mode does not have these advantages.

SATA Controller 0

Please select [**Compatible**] when you install legacy OS. If native OS (Windows® XP / Vista™ / 7) is installed, please select [**Enhanced**].

SATA Controller 1

Please select [**Compatible**] when you install legacy OS. If native OS (Windows® XP / Vista™ / 7) is installed, please select [**Enhanced**].

Hard Disk S.M.A.R.T.

Use this item to enable or disable the S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) feature. Con guration options: [Disabled] and [Enabled].

3.3.8 Super IO Configuration

OnBoard Floppy Controller

Use this item to enable or disable oppy drive controller.

Serial Port

Use this item to enable or disable the onboard serial port.

Serial Port Address

Use this item to set the address for the onboard serial port. Con guration options: [Auto], [3F8 / IRQ4], [2F8 / IRQ3], [3E8 / IRQ4], [2E8 / IRQ3].

Infrared Port

Use this item to enable or disable the onboard infrared port.

Infrared Port Address

Use this item to set the address for the onboard infrared port.

Con guration options: [Auto], [3F8 / IRQ4], [2F8 / IRQ3], [3E8 / IRQ4], [2E8 / IRQ3].

Parallel Port

Use this item to enable or disable the onboard parallel port.

Change Settings

Use this item to select an optional setting for Super IO device.

Device Mode

Use this item to change the Printer Port mode.

3.3.9 Voltage Configuration

CPU Core Voltage Offset

Use this to select CPU Core Voltage Offset. Con guration options: [Auto], [-0.300V] to [+0.500V]. The default value is [Auto].

IGPU Voltage

Use this to select IGPU Voltage. Con guration options: [Auto], [Offset Mode] and [Fix Mode]. The default value is [Auto].

DRAM Voltage

Use this to select DRAM Voltage. Con guration options: [Auto], [1.201V] to [1.800V]. The default value is [Auto].

PCH Voltage

Use this to select PCH Voltage. Con guration options: [Auto], [0.780V] to [1.646V]. The default value is [Auto].

CPU PLL Voltage

Use this to select CPU PLL Voltage. Con guration options: [Auto], [1.548V] to [2.310V]. The default value is [Auto].

VTT Voltage

Use this to select VTT Voltage. Con guration options: [Auto], [0.815V] to [1.634V]. The default value is [Auto].

VCCSA Voltage

Use this to select VCCSA Voltage. Con guration options: [Auto], [0.925V] to [1.200V]. The default value is [Auto].

3.3.10 ACPI Configuration

Suspend to RAM

Use this item to select whether to auto-detect or disable the Suspend-to-RAM feature. Select [Auto] will enable this feature if the OS supports it.

PS/2 Keyboard Power On

Use this item to enable or disable PS/2 keyboard to turn on the system from the power-soft-off mode.

PCI Devices Power On

Use this item to enable or disable PCI devices to turn on the system from the power-soft-off mode.

Ring-In Power On

Use this item to enable or disable Ring-In signals to turn on the system from the power-soft-off mode.

RTC Alarm Power On

Use this item to enable or disable RTC (Real Time Clock) to power on the system.

3.3.11 USB Configuration

USB 2.0 Controller

Use this item to enable or disable the use of USB 2.0 controller.

USB 3.0 Controller

Use this item to enable or disable the use of USB 3.0 controller.

Legacy USB Support

Use this option to select legacy support for USB devices. There are four con guration options: [Enabled], [Auto], [Disabled] and [UEFI Setup Only]. The default value is [Enabled]. Please refer to below descriptions for the details of these four options:

[Enabled] - Enables support for legacy USB.

[Auto] - Enables legacy support if USB devices are connected.

[Disabled] - USB devices are not allowed to use under legacy OS and UEFI setup when [Disabled] is selected. If you have USB compatibility issue, it is recommended to select [Disabled] to enter OS.

[UEFI Setup Only] - USB devices are allowed to use only under UEFI setup and Windows / Linux OS.

Legacy USB 3.0 Support

Use this option to enable or disable legacy support for USB 3.0 devices. The default value is [Enabled].

3.4 Hardware Health Event Monitoring Screen

In this section, it allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature, CPU fan speed, chassis fan speed, and the critical voltage.

CPU Fan Setting

This allows you to set the CPU fan speed. Con guration options: [Full On] and [Automatic Mode]. The default is value [Full On].

Chassis Fan 1 Setting

This allows you to set the chassis fan 1 speed. Con guration options: [Full On] and [Automatic Mode]. The default is value [Full On].

Chassis Fan 2 Setting

This allows you to set the chassis fan 2 speed. Con guration options: [Full On] and [Automatic Mode]. The default is value [Full On].

Power Fan Setting

This allows you to set the power fan speed. Con guration options: [Full On] and [Automatic Mode]. The default is value [Full On].

Over Temperature Protection

Use this item to enable or disable Over Temperature Protection. The default value is [Enabled].

3.5 Boot Screen

In this section, it will display the available devices on your system for you to con g-ure the boot settings and the boot priority.

Setup Prompt Timeout

This shows the number of seconds to wait for setup activation key. 65535(0XFFFF) means inde nite waiting.

Bootup Num-Lock

If this item is set to [On], it will automatically activate the Numeric Lock function after boot-up.

Full Screen Logo

Use this item to enable or disable OEM Logo. The default value is [Enabled].

AddOn ROM Display

Use this option to adjust AddOn ROM Display. If you enable the option "Full Screen Logo" but you want to see the AddOn ROM information when the system boots, please select [Enabled]. Con guration options: [Enabled] and [Disabled]. The default value is [Enabled].

Boot From Onboard LAN

Use this item to enable or disable the Boot From Onboard LAN feature.

Boot Failure Guard

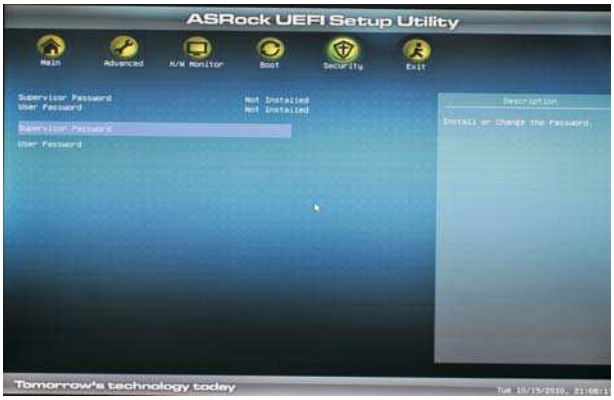
Enable or disable the feature of Boot Failure Guard.

Boot Failure Guard Count

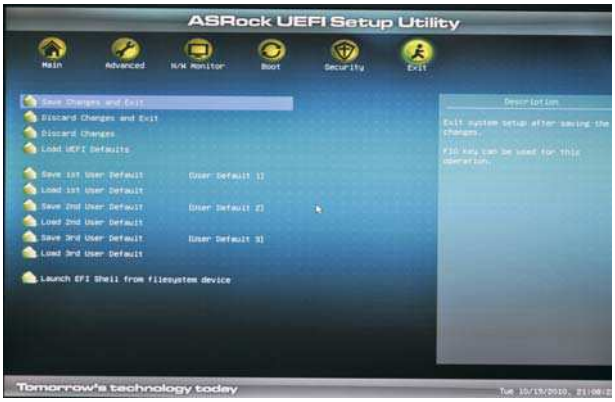
Enable or disable the feature of Boot Failure Guard Count.

3.6 Security Screen

In this section, you may set or change the supervisor/user password for the system. For the user password, you may also clear it.



3.7 Exit Screen



Save Changes and Exit

When you select this option, it will pop-out the following message, “Save con guration changes and exit setup?” Select [OK] to save the changes and exit the UEFI SETUP UTILITY.

Discard Changes and Exit

When you select this option, it will pop-out the following message, “Discard changes and exit setup?” Select [OK] to exit the UEFI SETUP UTILITY without saving any changes.

Discard Changes

When you select this option, it will pop-out the following message, “Discard changes?” Select [OK] to discard all changes.

Load UEFI Defaults

Load UEFI default values for all the setup questions. F9 key can be used for this operation.

User Default

In this option, you are allowed to load and save three user defaults according to your own requirements.

Launch EFI Shell from filesystem device

Attempts to Launch EFI Shell application (Shell64.efi) from one of the available lesystem devices.

Chapter 4: Software Support

4.1 Install Operating System

This motherboard supports various Microsoft® Windows® operating systems: 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP 64-bit. Because motherboard settings and hardware options vary, use the setup procedures in this chapter for general reference only. Refer to your OS documentation for more information.

4.2 Support CD Information

The Support CD that came with the motherboard contains necessary drivers and useful utilities that enhance the motherboard features.

4.2.1 Running The Support CD

To begin using the support CD, insert the CD into your CD-ROM drive. The CD automatically displays the Main Menu if “AUTORUN” is enabled in your computer. If the Main Menu did not appear automatically, locate and double click on the file “ASSETUP.EXE” from the BIN folder in the Support CD to display the menus.

4.2.2 Drivers Menu

The Drivers Menu shows the available devices drivers if the system detects installed devices. Please install the necessary drivers to activate the devices.

4.2.3 Utilities Menu

The Utilities Menu shows the applications software that the motherboard supports. Click on a specific item then follow the installation wizard to install it.

4.2.4 Contact Information

If you need to contact ASRock or want to know more about ASRock, welcome to visit ASRock’s website at http://www.asrock.com; or you may contact your dealer for further information.

Installing OS on a HDD Larger Than 2TB

This motherboard is adopting UEFI BIOS that allows Windows® OS to be installed on a large size HDD (>2TB). Please follow below procedure to install the operating system.

1. Please make sure to use **Windows® Vista™ 64-bit (with SP1 or above)** or **Windows® 7 64-bit**.
2. Press <F2> or <Delete> at system POST. Set **AHCI Mode** in UEFI Setup Utility > Advanced > Storage Configuration > SATA Mode.
3. Choose the item **"UEFI:xxx"** to boot in UEFI Setup Utility > Boot > Boot Option #1. ("xxx" is the device which contains your Windows® installation files. Normally it is an optical drive.) You can also press <F11> to launch boot menu at system POST and choose the item **"UEFI:xxx"** to boot.
4. Start Windows® installation.
5. If you install **Windows® 7 64-bit** OS, OS will be formatted by GPT (GUID Partition Table). Please install the hotfix file from Microsoft®: http://support.microsoft.com/kb/979903